

Robust Multicore Middleware, Phase I

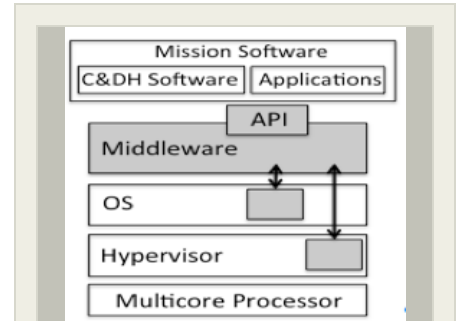
Completed Technology Project (2017 - 2017)



Project Introduction

Current and emerging spaceflight processors are leveraging heterogeneous multicore/co-processor architectures to satisfy the ever increasing onboard processing demands required by planned NASA missions. These architectures can provide increased processing bandwidth, power efficiency, and fault tolerance for onboard processing applications. However, these advantages come at the cost of increased hardware and software complexity. As software development is a major cost driver for missions, this increased complexity has the potential to significantly increase cost for future missions. To address this risk, Troxel Aerospace Industries, Inc. proposes to develop a robust middleware management technology for spacecraft-focused multicore/co-processor architectures. The proposed middleware technology will enable a fault tolerant computing environment that is agnostic to the underlying hardware and is largely transparent to mission applications executing upon the middleware to provide a standardized, intelligent resource, fault, and power management interface.

Primary U.S. Work Locations and Key Partners



Robust Multicore Middleware,
Phase I Briefing Chart Image

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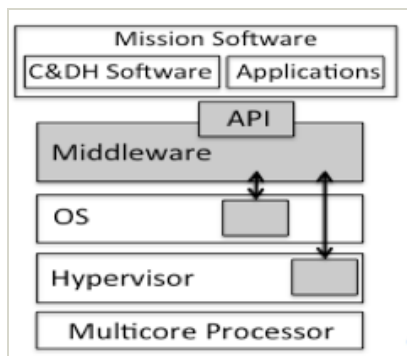
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Organizations Performing Work	Role	Type	Location
Troxel Aerospace Industries, Inc.	Lead Organization	Industry	Gainesville, Florida
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Florida

Images



Briefing Chart Image

Robust Multicore Middleware, Phase I Briefing Chart Image
(<https://techport.nasa.gov/image/128186>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Troxel Aerospace Industries, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

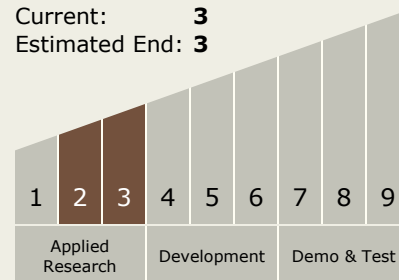
Carlos Torrez

Principal Investigator:

Ian A Troxel

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



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Technology Areas

Primary:

- TX10 Autonomous Systems
 - └ TX10.2 Reasoning and Acting
 - └ TX10.2.5 Fault Diagnosis and Prognosis